AMENDMENT TO THE CLAIMS

1.(currently amended) An apparatus for use in a process device which provides a desired Safety Integrity Level (SIL) for the process device, comprising:

a device interface configured to couple to the process device and provide an output related to operation of a component of the process device;

a component monitor configured to monitor operation of the component based upon the output from the device interface and identify a safety event of the component and provide a safety event output; and

a safety response module configured to respond to the safety event of the component based upon the safety event output in accordance with a safety response.

2. (original) The apparatus of claim 1 wherein the device interface comprises a connection to a databus of the process device.

3. (original) The apparatus of claim 2 wherein the component monitor is configured to monitor data carried on the databus.

4. (original) The apparatus of claim 1 wherein the device interface comprises a sensor coupled to the process device.

5. (original) The apparatus of claim 4 wherein the process device couples to a process control loop and sensor is configured to monitor current flow in the process control loop.

6. (original) The apparatus of claim 5 wherein the component monitor compares the sensed current with a current value.

7. (original) The apparatus of claim 1 wherein the safety response module controls the current in a process control loop based upon a safety failure.

8. (original) The apparatus of claim 1 wherein the device interface comprises a watch dog circuit.

9. (original) The apparatus of claim 1 wherein the device interface is configured to sense power drawn by circuitry of the process device.

10. (original) The apparatus of claim 1 wherein the device interface couples to a memory.

11. (original) The apparatus of claim 10 wherein the component monitor is configured to detect errors in the data stored in the memory.

12. (original) The apparatus of claim 1 wherein the safety response module provides an alarm output.

13. (original) The apparatus of claim 1 wherein the safety response module disconnects the process device from a process control loop.

14. (original) The apparatus of claim 1 wherein the safety response module disconnects circuitry in the process device.

15. (original) The apparatus of claim 1 wherein the safety response module attempts to compensate for the safety failure.

16. (original) The apparatus of claim 14 wherein the safety response module corrects for errors in data in the device.

17. (original) The apparatus of claim 16 wherein the safety response module interpolates between data points in order to correct a data error.

18. (original) The apparatus of claim 16 wherein the safety response module holds a previous data point.

19. (original) The apparatus of claim 4 wherein the sensor comprises a voltage sensor.

20. (original) The apparatus of claim 4 wherein the sensor comprises a current sensor.

21. (original) The apparatus of claim 1 wherein the device interface is configured to monitor data carried in a databus of the device.

22. (original) The apparatus of claim 1 wherein the component monitor comprises software implemented in a microprocessor of the device.

23. (original) The apparatus of claim 1 wherein the safety event comprises a possibility of a future component failure.

24. (original) The apparatus of claim 1 wherein the safety event comprises a detection of a component failure.

25. (original) A process variable transmitter including the apparatus of claim 1.

26. (original) The transmitter of claim 25 wherein the safety response module is implemented in a feature module which couples to a sensor module.

27. (original) The transmitter of claim 25 wherein the safety response module is implemented in a feature module which couples to a plurality of sensor module.

28. (original) The transmitter of claim 25 wherein the component monitor is configured to monitor data for a sensor in the sensor module.

29. (original) The apparatus of claim 25 including a display and wherein the component monitors data sent to the display.

30. (original) A process controller including the apparatus of claim 1.

31. (original) A device in a Safety Instrumented System (SIS) in accordance with claim 1.

32. (original) The apparatus of claim 1 wherein the component monitor is configured to monitor a plurality of process devices.

33. (original) The apparatus of claim 1 wherein the component monitor and safety response module are implemented in software.

34. (original) The apparatus of claim 34 wherein the software is configured to upgrade an existing process device.

35. (original) A feature module in accordance with claim 1 configured to upgrade an existing process device.

36. (currently amended) A transmitter for use in an industrial process, comprising:

a sensor module configured to couple to the process and measure a process variable;

a feature module configured to couple to the sensor module, the feature module including:

a device interface configured to couple to the process device and provide an output related to operation of a component of the process device;

a component monitor configured to monitor operation of the component based upon the output from the device interface and identify a safety event of the component and provide a safety event output; and

a safety response module configured to respond to the safety event of the component based upon the safety event output in accordance with a safety response.

37. (currently amended) A method of meeting Safety Integrity Level (SIL) in a process device, comprising:

sensing operation of a component of the process device;

monitoring the sensed operation of component, ~~and~~ identifying a safety event of the component and provide a safety event output; and

responding to the safety event based upon the safety event output in accordance with a safety response.

38. (original) The method of claim 37 wherein the monitoring comprising monitoring data carried on a databus.

39. (original) The method of claim 37 wherein the sensing uses a sensor coupled to the process device.

40. (original) The method of claim 37 wherein the process device couples to a process control loop and sensing comprises sensing current flow in the process control loop.

41. (original) The method of claim 40 wherein monitoring comprises comparing the sensed current with a current value.

42. (original) The method of claim 37 wherein responding comprises controlling the current in a process control loop based upon a safety failure.

43. (original) The method of claim 37 wherein sensing comprises sensing power drawn by circuitry of the process device.

44. (original) The method of claim 37 wherein monitoring comprises detecting errors in the data stored in the memory.

45. (original) The method of claim 37 wherein responding comprises providing an alarm output.

46. (original) The method of claim 37 wherein responding comprises disconnecting the process device for a process control loop.

47. (original) The method of claim 37 wherein responding comprises compensating for the safety failure.

48. (original) The method of claim 37 wherein responding comprises correcting for errors in the data in the device.

49. (original) The method of claim 37 wherein sensing comprises sensing a voltage.

50. (original) The method of claim 37 wherein sensing comprises sensing a current.

51. (original) The method of claim 37 wherein the safety event comprises a possibility of a future component failure.